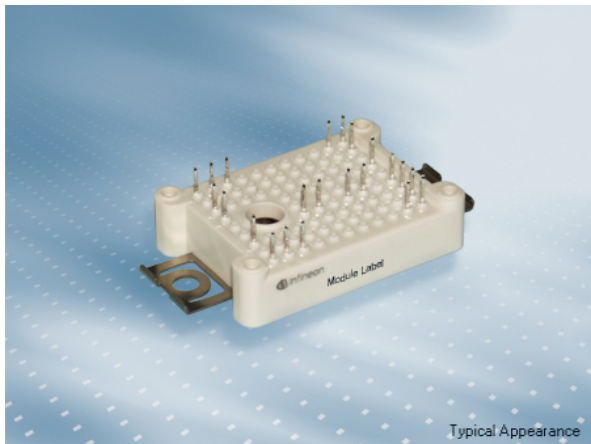
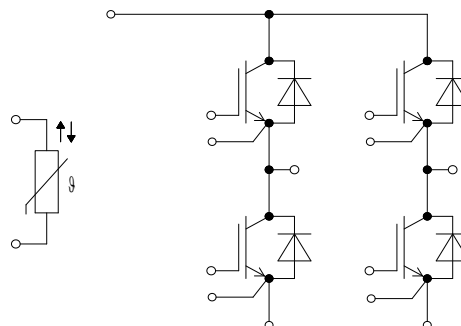


EasyPACK Modul mit schnellem Trench/Feldstopp IGBT3 und Rapid 1 Diode und PressFIT / NTC
EasyPACK module with fast Trench/Fieldstop IGBT3 and Rapid 1 diode and PressFIT / NTC



Typical Appearance



$V_{CES} = 650V$
 $I_{C\ nom} = 37,5A / I_{CRM} = 75A$

Typische Anwendungen

- Anwendungen im Automobil
- Anwendungen mit hohen Schaltfrequenzen
- DC/DC Wandler
- Hilfsumrichter
- Hybrid-Elektrofahrzeuge (H)EV
- Induktives Erwärmen und Schweißen

Elektrische Eigenschaften

- Erhöhte Sperrspannungsfestigkeit auf 650V
- High Speed IGBT H3
- Niederinduktives Design
- Niedrige Schaltverluste

Mechanische Eigenschaften

- 2,5 kV AC 1min Isolationsfestigkeit
- Große Luft- und Kriechstrecken
- Integrierter NTC Temperatur Sensor
- PressFIT Verbindungstechnik
- RoHS konform
- Robuste Montage durch integrierte Befestigungsklammern

Typical Applications

- Automotive Applications
- High Frequency Switching Application
- DC/DC converter
- Auxiliary Inverters
- Hybrid Electrical Vehicles (H)EV
- Inductive Heating and Welding

Electrical Features

- Increased blocking voltage capability to 650V
- High Speed IGBT H3
- Low inductive design
- Low Switching Losses

Mechanical Features

- 2.5 kV AC 1min Insulation
- High Creepage and Clearance Distances
- Integrated NTC temperature sensor
- PressFIT Contact Technology
- RoHS compliant
- Rugged mounting due to integrated mounting clamps

Module Label Code

Barcode Code 128



DMX - Code



Content of the Code

Digit

| | |
|----------------------------|---------|
| Module Serial Number | 1 - 5 |
| Module Material Number | 6 - 11 |
| Production Order Number | 12 - 19 |
| Datecode (Production Year) | 20 - 21 |
| Datecode (Production Week) | 22 - 23 |

| | | |
|-----------------|---------------------------------|----------------------|
| prepared by: AS | date of publication: 2014-03-05 | |
| approved by: TR | revision: 3.0 | UL approved (E83335) |



IGBT, Wechselrichter / IGBT, Inverter
Höchstzulässige Werte / Maximum Rated Values

| | | | | |
|--|---|-------------------|-------|---|
| Kollektor-Emitter-Sperrspannung Collector-emitter voltage | $T_{vj} = 25^{\circ}\text{C}$ | V_{CES} | 650 | V |
| Implementierter Kollektor-Strom Implemented collector current | | I_{CN} | 75 | A |
| Kollektor-Dauergleichstrom Continuous DC collector current | $T_C = 105^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$ | $I_{C\text{nom}}$ | 37,5 | A |
| Periodischer Kollektor-Spitzenstrom Repetitive peak collector current | $t_P = 1\text{ ms}$ | I_{CRM} | 150 | A |
| Gesamt-Verlustleistung Total power dissipation | $T_C = 25^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$ | P_{tot} | 275 | W |
| Gate-Emitter-Spitzenspannung Gate-emitter peak voltage | | V_{GES} | +/-20 | V |

Charakteristische Werte / Characteristic Values

| | | | min. | typ. | max. | | |
|---|---|---|--------------------|-------------------------|------|-------------|---|
| Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage | $I_C = 37,5\text{ A}, V_{GE} = 15\text{ V}$ $I_C = 37,5\text{ A}, V_{GE} = 15\text{ V}$ $I_C = 37,5\text{ A}, V_{GE} = 15\text{ V}$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | $V_{CE\text{sat}}$ | 1,50 1,55 1,60 | 1,85 | V V V | |
| Gate-Schwellenspannung Gate threshold voltage | $I_C = 1,20\text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$ | | $V_{G\text{Eth}}$ | 4,9 | 5,8 | 6,5 | V |
| Gateladung Gate charge | $V_{GE} = -15\text{ V} \dots +15\text{ V}$ | | Q_G | 0,80 | | | μC |
| Interner Gatewiderstand Internal gate resistor | $T_{vj} = 25^{\circ}\text{C}$ | | $R_{G\text{int}}$ | 0,0 | | | Ω |
| Eingangskapazität Input capacitance | $f = 1\text{ MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$ | | C_{ies} | 4,70 | | | nF |
| Rückwirkungskapazität Reverse transfer capacitance | $f = 1\text{ MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$ | | C_{res} | 0,14 | | | nF |
| Kollektor-Emitter-Reststrom Collector-emitter cut-off current | $V_{CE} = 650\text{ V}, V_{GE} = 0\text{ V}, T_{vj} = 25^{\circ}\text{C}$ | | I_{CES} | | | 0,05 | mA |
| Gate-Emitter-Reststrom Gate-emitter leakage current | $V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}, T_{vj} = 25^{\circ}\text{C}$ | | I_{GES} | | | 400 | nA |
| Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load | $I_C = 37,5\text{ A}, V_{CE} = 300\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{G\text{on}} = 4,3\ \Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | $t_{d\text{on}}$ | 0,019 0,019 0,02 | | | μs μs μs |
| Anstiegszeit, induktive Last Rise time, inductive load | $I_C = 37,5\text{ A}, V_{CE} = 300\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{G\text{on}} = 4,3\ \Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | t_r | 0,011 0,012 0,012 | | | μs μs μs |
| Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load | $I_C = 37,5\text{ A}, V_{CE} = 300\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{G\text{off}} = 4,3\ \Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | $t_{d\text{off}}$ | 0,16 0,19 0,20 | | | μs μs μs |
| Fallzeit, induktive Last Fall time, inductive load | $I_C = 37,5\text{ A}, V_{CE} = 300\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{G\text{off}} = 4,3\ \Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | t_f | 0,006 0,012 0,013 | | | μs μs μs |
| Einschaltverlustenergie pro Puls Turn-on energy loss per pulse | $I_C = 37,5\text{ A}, V_{CE} = 300\text{ V}, L_S = 25\text{ nH}$ $V_{GE} = \pm 15\text{ V}, di/dt = 3100\text{ A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{G\text{on}} = 4,3\ \Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | E_{on} | 0,23 0,36 0,40 | | | mJ mJ mJ |
| Abschaltverlustenergie pro Puls Turn-off energy loss per pulse | $I_C = 37,5\text{ A}, V_{CE} = 300\text{ V}, L_S = 25\text{ nH}$ $V_{GE} = \pm 15\text{ V}, du/dt = 5000\text{ V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{G\text{off}} = 4,3\ \Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | E_{off} | 0,33 0,51 0,58 | | | mJ mJ mJ |
| Kurzschlußverhalten SC data | $V_{GE} \leq 15\text{ V}, V_{CC} = 360\text{ V}$ $V_{CE\text{max}} = V_{CES} - L_{SCE} \cdot di/dt$ $t_P \leq 4\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$ | | I_{SC} | 430 | | | A |
| Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case | pro IGBT / per IGBT | | R_{thJC} | 0,45 | 0,55 | | K/W |

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